

Say it with stone: constructing with stones on Easter Island

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Abstract

By considering the stones of Rapa Nui (Easter Island) on a landscape scale, their sources, properties and elemental use in architecture during the statue production period and beyond – from modest ovens to immense statues, a case is made that stone and stones were an essential connective substance of Rapa Nui society. It is posited that stone connected understandings of the land and sea both directly and inversely, that it expressed through colour the sacred status of the ancestors, and that it aligned human life-cycles with the natural lives of stone and stones. Work with stone on Rapa Nui was potentially sacred work and to harvest and move stone required that places and people were linked in face-to-face and hand-to-hand labour. This related to far more than the task of making and sometimes moving colossal statues. Whole beaches or at least their stones were transposed from sea to land and a wide range of land and sea stones were used conjointly to create webs of meaning on an island-wide scale.

Keywords

Poro; Puna Pau; Rano Raraku; Rapa Nui (Easter Island); sea; stone shape; stone size; stone colour; volcano.

Introduction

During the period between *c.* AD 1200 and 1600, megalithic construction activities reached a zenith on a tiny isolated island in the Pacific Ocean – Rapa Nui (Easter Island) (Figs 1 and 2). Its huge anthropomorphic statues (*moai*) on their monumental platforms (*ahu*) have caught the imaginations of people well beyond the world of professional archaeologists, while their iconic images are used to illustrate ideas with little or no connection to their South Pacific home. If asked *what* stones were used in the construction of these monuments most people would be hard pressed to come up with an answer. The better informed would perhaps refer to the yellow tuff from the Rano Raraku quarry, out



Figure 1 Location of Rapa Nui in the Pacific Ocean.

of which most *moai* were carved, and the red scoria from the Puna Pau quarry, used for *moai* topknots or headdresses (*pukao*). However, the population of Rapa Nui also used many other stone types present on their small volcanic island, in the construction of monuments, domestic buildings and other structures, and for making tools. The choices of which stones were used for what purposes were partly related to functional attributes and other practical matters, such as availability. However, many of the usages cannot be explained in this way and it is clear that they also served as a medium of expression of complex symbolic ideas. In this article we aim to describe the different stones of the island, their sources, their characteristics and the ways they were used, as a route into understanding what it was that the Easter Islanders were ‘saying with stones’. Our focus here is on stone as a meaning-laden substance both at its source and in its deployment on an island-wide basis in architectural contexts at interconnected spatial and symbolic scales. Concurrently, it is possible to suggest that at least some of the sources/quarries of Rapa Nui stone and work with stone were associated with sacred or *tapu* (forbidden) locales and work (Hamilton et al. 2008; Richards et al. this volume).

Changing perspectives

Traditionally, the role of stone in prehistoric societies has been interpreted in terms of Western preoccupations with the practicalities of strength, workability and availability of rock types. But, alongside this, there have been long-recognized instances of exotic rocks

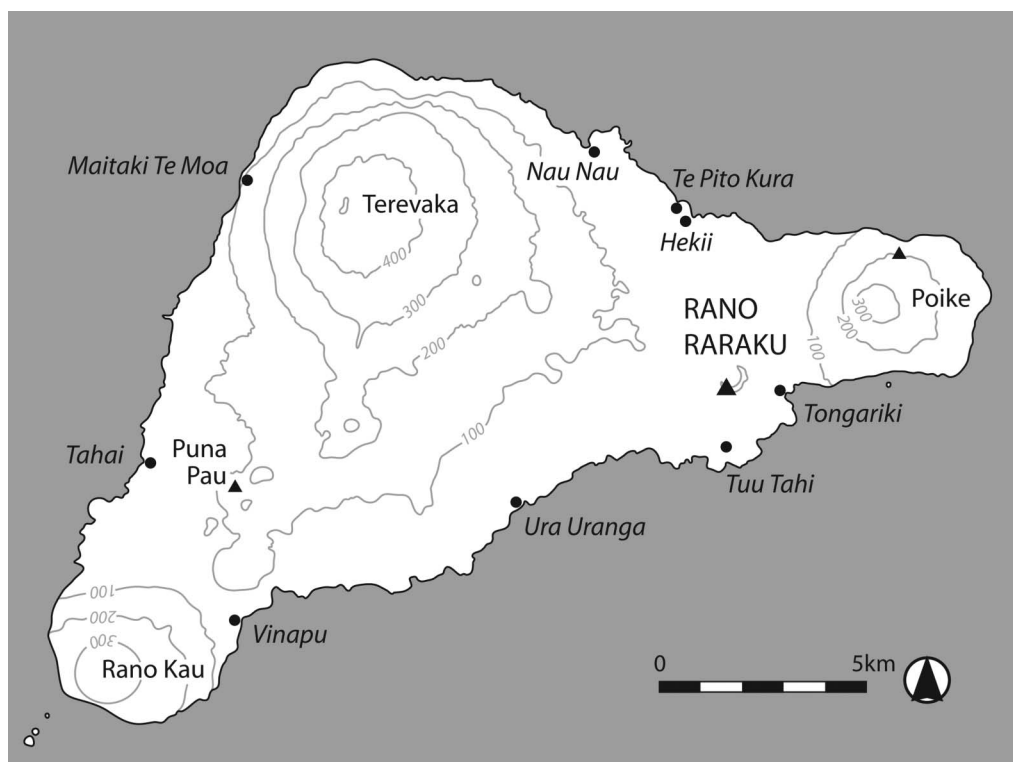


Figure 2 Rapa Nui, showing the principal landscape features, *ahu* – ceremonial platforms (dots) – and quarries (triangles) referred to in the text. The island has *c.* 113 *ahu* with statues (image *ahu*), most of which ring the coast. A small number of image *ahu* are found in the island's interior. There are also > 150 non-statue bearing *ahu* of various forms (Martinsson-Wallin 1994, 2007).

being transported to monuments to embellish their structural meaning and evoke connections with far-off places. For colossal stones perhaps the most notable, and recurrently disputed, example of long-distance translocation comes from the UK, namely Stonehenge's bluestones, which are variously sourced directly to the Preseli Mountains, South Wales, a distance of about 245km from Stonehenge, Wiltshire (Atkinson 1956; Green 1997; Scourse 1997; Thomas 1923), or suggested to have been locally acquired as glacially transported 'erratics' (Thorpe et al. 1991). In common with the Rapa Nui statues, the methods of transporting Stonehenge's stones are a much returned to topic (e.g. Heyerdahl et al. 1989; Love 2000; Richards and Whitby 1997; Skjølsvold 1961). In non-mechanized societies moving megalithic stones and quantities of boulders over long distances was probably as much a social and ideological process as a purely practical task or an activity exclusively dependent on a specific form of socio-economic organization such as a 'chiefdom' society (Burton 1984; Kirch 1984; Renfrew 1973). Monumental construction necessarily involved person-to-person interfaces, co-working groups and the associated social prestige or consequences of success/failure of the building project (McFadyen 2007; Richards 2009). In a Polynesian context, the human hand-to-hand chains that moved hundreds of thousands of sea boulders over tens of kilometres from

beaches to the construction loci of Hawaiian ceremonial platforms (*heiau*) personify the physical and metaphoric social links that acts of monumental construction cement (James 1995: 144).

Research at the end of the twentieth century and in recent times emphasizes that ease of access to stone sources and the potential use-practicalities of specific geologies were not necessarily central considerations in the acquisition of stone. Scarre's (2004) consideration of Western European megalithic monuments, for example, emphasizes the reverse and suggests that particular types of stone were selected precisely because they come from exotic or isolated places. Severe difficulty of topographic access to stone sources and the heightened sensory environments of many such locales (Bradley 2000) afforded possibilities for the status enhancement and physical separation of a source from the sphere of the everyday. Well-known examples include the precarious inclines and impressive view points at *c.* 500–700m above sea level associated with the Great Langdale Neolithic stone-axe factories in the Cumbrian mountains, UK (Bradley and Edmunds 1993: 134, 206) and the physical isolation of Neolithic stone-axe sources on Irish off-shore islands (Cooney 1998). Social control of rights of access, and ideological proscriptions and ritual safeguards, such as the Polynesian concept of *tapu*, applied to things/places that are sacrosanct/dangerous and must be left alone or approached with care, can further rarefy and mythologize the status of mineral sources. This is highlighted in McBryde's (1984) study of the Mount William greenstone quarry, Australia, and Burton's (1984: 240) study of the Tuman axe quarries of the Papa New Guinea highlands. Likewise, the Mauna Kea stone-adze quarry complex on Hawai'i (Big Island) provides a potent Polynesian example of special sensory conditions and restricted access associated with an important stone source. In Hawaiian mythology, the peaks of the island are sacred and access to the highest – Mauna Kea – was restricted to high-ranking chiefs (McCoy 1999). The axe factory complex lies in the thin-air, cloud-covered zone where without acclimatization it is hard to breathe, never mind labour. Shrine stones mark off the peak and their proximity to the quarries suggests that the work too was conceived of as sacred (Bayman and Nakamura 2001: 239–40; McCoy 1990).

Recent archaeological attention has shifted from the typology and use of the finished form of stone objects and architecture to the symbolism and 'ritual empowerment' of both stone objects and unmodified stones. Hampton's (1999) study of stone use among the Dani of New Guinea, for example, describes a material world that, in common with Rapa Nui, is substantively reliant on stone as a cultural medium and, among other things, highlights how selected stones and stone objects are ascribed a 'cosmic sacrality' in which stones are not themselves sacred; rather, the sacred is manifest in stones (Eliade 1987 [1957]: 12). Concurrently, there has been a growing appreciation of stone as a material substance that is sensually potent, with concordant powers and attributed meanings (Taçon 1991; Tilley 2004). The selection of distinctly coloured rocks for stone implements in Neolithic Europe and their distribution over hundreds of kilometres from source, such as blue-green Alpine jadeite and honey-coloured chert from Grand Pressigny, central France, have long been attributed to the aesthetics and concomitant status associated with their colour, rather than to their practical properties for use as tools (Sherratt 1976). Paul Taçon's work, drawing upon the wealth of Australia's ethnohistorical and anthropological material, has been particularly influential in bringing the sensory and signifying aspects of stones and the mineral world to the fore (Taçon 1991). In a European context, symbolic associations



Plate 1 Restored (1978–9) Ahu Nau Nau at Anakena comprising – from top to bottom – red scoria pukao from Puna Pau, tuff moai from Rano Raraku, flow lava dressed stone walling and poro (small beach boulders > c. 25 cm across) on the ramp. Uniquely Ahu Nau Nau is located on a sandy beach. Most of Rapa Nui's coastline is rocky (see Plate 5). The first inlaid eye of the statues was found during restoration work: an almost complete white coral eye with an inlaid iris of red scoria (Martinsson-Wallin 2007: 46) (photo: Adam Stanford).

of the mineral world have been extensively developed for colour (e.g. Cooney 2002; Owoc 2002). Other sensory aspects have also been isolated as factors in stone's symbolism, such as brightness, shimmer and luminosity (e.g. of quartzite – Brumm 2004; Taçon 2004) and the choice of particular textures and textured stones for UK Neolithic monumental architecture (Cummings 2002; Watson 2001: 308). These perspectives have transformed an Occidental perspective on stones as inert and inorganic to one in which stone is a dynamic substance. In the latter perspective stone can variously impart and acquire meaning and may be the material outcome of metamorphosed living matter – such as the skin, bone, fat or blood of ancestral beings (Brumm 2004: 147; Taçon 1991: 203). Given the widespread and prolific use of stone on Rapa Nui during the statue-building period and beyond, it is striking that Rapa Nui research has not engaged – beyond a restricted discussion of colour symbolism – with these recent archaeological approaches to the symbolism and conceptual use of stone.

Rapa Nui: a Pacific island

On the eastern tip of the Polynesian triangle, much of the landscape of Rapa Nui, like Hawai'i Big Island on the northern tip, is dominated by bare, volcanic rock. Unlike Hawai'i Big Island, however, Rapa Nui has no active volcanoes and was once mostly tree covered. The reasons for the deforestation of Rapa Nui are fiercely disputed, but it is clear

that the availability of palm-tree trunks for moving and erecting large stone statues and building blocks increasingly declined from AD 1500 (Diamond 2006; Flenley and Bahn 2002: 149–72; Hunt and Lipo 2009). Nonetheless, the use of stone continued after this date for house foundations, horticultural structures and mausoleums, as well as for the transformation of *ahu* into rubble monuments.

Rapa Nui stone study has been fixated on the mechanics of transporting *moai* and *pukao* from quarry to the *ahu* that ring the island's coast (Plate 1). Beyond this, interest in feats of construction fades and research focuses on interpreting *ahu* as loci for ceremonies, as the embodiments of the 'deified ancestors who had become tutelary tribal deities' (Metrax 1971 [1940]: 307), and as places of crematoria and later mausoleums. One of the topics that remain under-investigated is the choice of specific rocks for different purposes. The purposes for which stone was used include: the construction of the main body of *ahu* architecture and associated funerary practices; structures in the landscapes associated with the *ahu* – boat-shaped houses (*hare paenga*), crop enclosures (*manavai*) and hearths/ovens (*umu*); tools; and rock gardening. Current understanding of these different usages remains unintegrated, leaving a narrow, *moai*-centred focus to the study of Rapa Nui stone and its construction activities. However, on Rapa Nui stone was a *total* material, a substance of construction that linked ceremonial, funerary and elite contexts and the world of the everyday. Given Rapa Nui's small size of c. 24x16km, it is possible to investigate this connectivity of stone use and meaning on an island-wide basis.

The stones of Rapa Nui

Triangular in shape, Rapa Nui is composed of three extinct volcanoes – Poike, Rano Kau and Terevaka – one at each one angle of the triangle, and tens of subsidiary cones, including Rano Raraku in the east and Puna Pau in the west (Fig. 2). Three craters contain vegetated freshwater lakes that constitute sensory oases in a rock-dominated island largely devoid of natural sources of fresh water. Between the volcanoes, the low-lying plains are formed of lava flows and comprise large areas of mostly bare rock and dense swathes of superficial stones. Precipitous sea cliffs or low volcanic reefs bound most of the island, with few easy access points to the open sea.

In five years of fieldwork on Rapa Nui, we have walked over many hundreds of rock outcrops, many of them demonstrably quarried, and traced stone from these to, and in some cases through, a range of structural types, notably *ahu*, in which the widest range of different stone types was brought together. Like that of any volcanic region, however, the geology of Rapa Nui is not homogeneous. Multiple episodes of varying volcanic activity originating in different volcanoes have resulted in a patchwork of interleaving rock types, some of which were useful or of interest to the prehistoric inhabitants of the island because of their specific properties. Complete knowledge of this complicated geological palimpsest is currently beyond archaeology's grasp, for a number of reasons. These include similarities between stone of the same broad type from different sources, the absolute number of outcrops of stone of utilizable type and the fact that many of the monuments are protected sites, which precludes close approach to, let alone systematic sampling of, the stones comprising them. However our detailed knowledge of both outcrops and

structures has given us a good empirical understanding, based on a combination of specific geological knowledge and sensory experience and it is on this combination of different types of understanding that the present work is based.

The *principal* rock types used in Rapa Nui's prehistoric architecture of the main statue construction period were: flow lava, basaltic or intermediate, present more or less everywhere on the island; red scoria, less abundant overall, but probably equally widespread; trachyte from Poike, at the east end of the island; the eponymous Rano Raraku tuff; obsidian, known in a usable size only from the west of the island; and two or three and probably many more different types of hard pyroclastic basalt, utilized for *toki*, the pick-like tools used for carving the statues. We have encountered quarries for all these types of rock during our fieldwork on the island. Two further important types are geomorphological rather than geological: small water-rolled boulders (*poro*) and water-rolled pebbles, mostly consisting of the harder flow lavas, which occur naturally on beaches all around the island. Finally, many sites yield coral and calcareous algae concretions – likewise from the shore – which, although not strictly rock, are rock-like. It is a combination of the morphology of these rocks – and the consequent ease with which they were harvested – and the existence of opposing properties, such as large *and* small, or softness *and* hardness, or light *and* dark, which could be used one against the other, that enabled the inhabitants of the island to utilize them in the way they did.

Flow lava

From many places, the surface of the island appears as uninterrupted black and green. The black here consists mostly of the dark grey or very dark brown, weathered surfaces of its flow lavas, extruded at different times from all three of the island's principal volcanoes.

Jointing at right angles to the flows' surfaces, these rocks break naturally into slabs or angular drums. The densest are tough, display a good sub-concoidal fracture and made good tools. By contrast, bubbly and/or phenocrystalline (that is, containing large individual crystals or groups of crystals) variants weigh less, are softer and easily shaped by pounding, which recommended them for building stone. The largest stones were reserved for *ahu* and the foundations of boat-shaped houses. Thus *paenga* (dressed blocks) in *Ahu Te Pito Kura*, the *ahu* with the largest statue, comprise wholly local coarsely vesicular basalt, and those in *Maitaki Te Moa*, on the north-west coast, comprise wholly local phenocrystalline material. Within a couple of hundred metres of both indeed are quarries of these rocks containing unfinished *ahu*-sized *paenga* (Plate 2). On the other hand, at some *ahu*, where stone of sufficient size or workability was lacking, importation was resorted to. These include the best-known *ahu* of all, *Vinapu*, the stone from which was most likely sourced on the summit of *Rano Kau*. It can also be inferred from the existence of quarries containing unfinished *paenga* of *ahu*-size in locations where there are no proximate *ahu* such as on *Rano Kau*, *Poike* and *Terevaka*, a good three kilometres from the nearest *ahu*. Flow lava, however, was harvested and used everywhere. Crag by *ahu* were quarried down to obtain smaller building stone, while volcanic clinker was cleared to create *ahu* plaza and supply stone rubble for *ahu* cores concurrently. Further inland crags and spreads were similarly depleted and scavenged to gain stone for *manavai* and other domestic structures and to spread across planting areas to retain ground moisture.



Plate 2 Unfinished *paenga* (dressed stone) in phenocrystalline flow lava upslope of *Ahu* Maitaki Te Moa (in the background to the left of the photograph, on the cliff edge). The *paenga* is about 1.5m wide. Numerous stone-working tools – *toki* (stone picks) and broken *poro* (small beach boulders) – were found in the vicinity (photo: Mike Seager Thomas).

Tuff

Rano Raraku tuff is a sedimentary volcanic rock consisting of air-lain layers of partially fused, partially cemented volcanic ash. In the field, its most obvious features are its yellow colour and its texture. The former would have stood out, and indeed still does stand out, vividly against the blue of the sea, while un-weathered dressed stones of this tuff are a different colour from and, lacking vesicles, finer-grained than most of the dressed stones of other types with which it was associated. But probably its most important property was workability. A tough rock, tough enough to withstand transport to the *ahu*, it is also relatively lightweight, and extractable in bigger pieces than any other rock type available on the island. Remarkably, therefore, it was reserved for carving into *moai*, of which some were later incorporated – whole or broken – into *ahu*, burials and other structures.

Red scoria

Red scoria is formed in and ejected from the turbulent, gaseous mouth of a volcano, at which time it acquires its colour through oxidization, and it is always on, or near, the relics of these that it is found: Puna Pau, the *pukao* quarry (Plate 3), Maunga O'Tuu, where two so-called 'aberrant' *moai* were carved into the living rock, Maunga Okoro, at the foot of which the larger boulders in a now vegetated scree, were shaped into *moai* – apparently *in situ*. In colour, it ranges from that of a damson (O'Tuu) to a vivid, almost blood red (Puna Pau), and, unlike the lavas described above, it darkens only slightly over time. Comprising a mass



Plate 3 The red scoria quarry at Puna Pau, an extinct volcanic crater – left: a row of *pukao* (statue top-knots) marking the ancient route into and out of the quarry; right: an unextracted *pukao* inside the crater (photos: Mike Seager Thomas).

of contorted, thin-walled bubbles, it is weak, lightweight and lustreless but would have been quick and easy to work with hard stone tools of the sort referred to above.

Irrespective of source and quality, red scoria was – like Rano Raraku tuff – associated with a limited range of uses. As far as we know, only Puna Pau consistently yielded stone of any size, and stone from there was transported all over the island in the form of *pukao* and *ahu* facia blocks (Fig. 3). Moreover whole or fragmentary statues in it are known from two locations, and boulders of it – sometimes whole *pukao* – were incorporated into later inhumation burials and it was routinely incorporated, crushed into crematoria and later cist burials – possibly derived from *pukao* working or toppled *pukao* at *ahu*. By contrast, red scoria from elsewhere on the island did not travel far nor was it extracted in quantity, but it was widely used in the backs of *ahu*, where, on the one hand, it appears usually to have been dressed and, on the other, never to have been used in large undressed blocks in the way other local stones were (local dark red scoria was used, for example, in the wings of *Ahu* Vinapu 1). There are also at least nine groups of or individual *moai* in it, and on Poike, outside the known distribution of *pukao*, a local source stood in for Puna Pau scoria in a probable inhumation burial and a crematorium (at *Ahu* Te Epa).

Trachyte

Originating in three lava domes on Poike, island trachyte – a distinct fine-grained whitish rock – is unusual in that, on the one hand, it is easily worked and, on the other, was *not* widely distributed across the island. On the Poike peninsula itself, it was used for *paenga*,

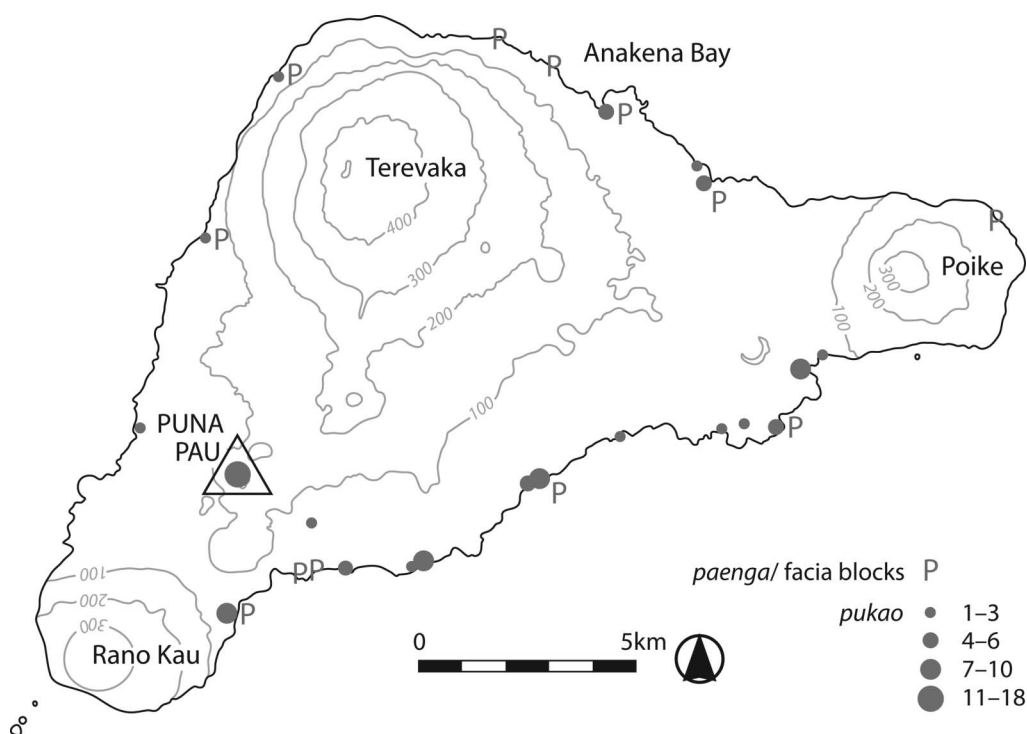


Figure 3 The distribution of *pukao* and *paenga/facia* blocks in red scoria from Puna Pau quarry. Stone from the latter was transported all over the island.

at one *ahu* alternating with *paenga* in darker flow lava (Plate 4), and in some of the island's most delicately carved *moai*. Owing to its scarcity overall and its different and more extensive use in an *ahu* close to its source, however, it is impossible to infer any further consistency in the choices made for it.

Poru

Poru – rounded beach boulders – originate exclusively on the beaches (Plate 5) of the island; there are *no* natural inland sources. Most common on sites near the coast, they are nonetheless widely distributed across the island where they were used to pave slipways to the sea and in *ahu* ramps (Plate 1), the external pavements of boat-shaped houses (Plate 8), in *umu* and other structures. End-battered *poru* from quarry and other sites seem to have been used as pounders for shaping larger stones while broken *poru* were shaped into axes (*toki*).

The origin of stone

We know where most of the stones used in Rapa Nui architecture come from, but how were these sources perceived, experienced and understood? Stone was quarried and picked



Plate 4 A small *ahu* at Te Epa on the south-east corner of Poike, in the front face of which white trachyte *paenga* alternate with *paenga* in darker grey flow lava. The trachyte is from the opposite side of Poike peninsula (photo: Mike Seager Thomas).

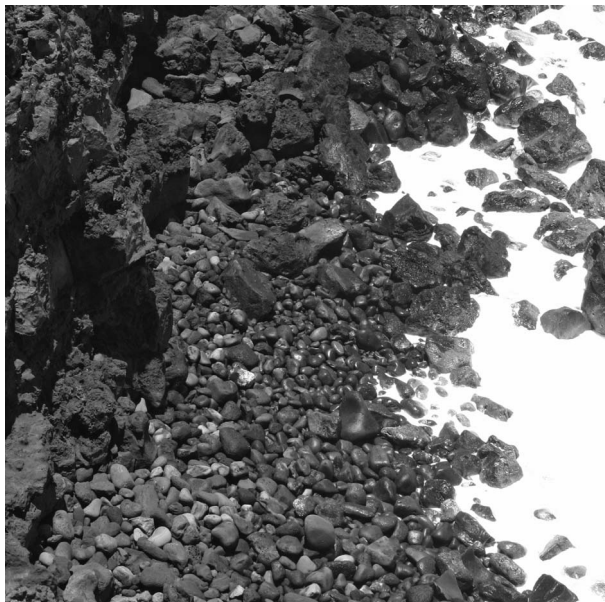


Plate 5 Un-harvested *poro* on the beach below *Ahu* Te Peu. Like *moai* tuff and Puna Pau red scoria, *poro*, which occur naturally only around the coast, are found across the whole island, in *ahu* ramps and pavements, slipways to the sea, boat-shaped houses and other structures (photo: Mike Seager Thomas).

from the island's surface, some coming from very distinct and/or unique topographic locales and others from more general types of locations that occur across it.

Maunga-stone – crater-stone

In the Polynesian ethnographic literature entry into, and communication with, the realms of gods and spirit beings are variously associated with 'holes in the ground', mountains (*maunga*) and volcano craters (summarized in Bausch 1978: 175). Significantly the largest, most visually distinct, stones used in Rapa Nui's architecture were carved from two extinct volcanoes – Puna Pau and Rano Raraku (Plates 3 and 6). Did these volcanoes, too, and their associated rock, the use of which was so constrained, have sacred connotations?

Rano Raraku is one of the most stunning places on Rapa Nui. Its jagged outline – intensely sculptured by the carving and extraction of colossal *moai* – rises from a plain in the south-east of the island. Almost all the *moai* on the *ahu* come from Rano Raraku, yet almost half of the *c.* 900 *moai* produced remain there (significantly more than ever stood on *ahu*), alongside thousands of *toki* used in their manufacture. Contrary to the popular view that the quarry was abandoned full of unfinished statues due to an eco-disaster, which left no resources with which to move them, the disposition of the statues suggests otherwise – that the majority were never meant to be moved. Supine statues remain attached to the bedrock, many situated in inaccessible 'shrine-like' quarry niches and often so densely juxtaposed



Plate 6 Rano Raraku quarry: view from the south of the quarried face of the exterior of the volcano crater. The tuff outcrop, consisting of air-lain layers of partially fused and cemented volcanic ash, is covered by *moai* in various stages of carving. In some cases the rock is left un-worked to 'frame' a partially carved *moai* (middle right). Spoil heaps (lower slopes) flank the approaches to bays and evoke a form of architectural representation. Erect statues, buried by quarrying debris, line the lower slopes of Rano Raraku, suggesting that these *moai* are integral to the architecture of the quarry (photo: Colin Richards).

head-to-tail it would have been impossible to get them out. Others were set upright, ringing the outer quarry slopes facing out to sea and others inside the crater interior face towards the crater's lake – all left to become buried up to their necks by subsequent quarry spoil – suggesting that the statues were meant to stay put as orchestrated sculptural embellishments and strategic markers of cosmologically conceived sacred space (Hamilton et al. 2008; Routledge 2005 [1919]: 181; Richards et al., this volume). Likewise at Puna Pau, where recent excavations at the base of an analogous avenue of *pukao* leading into or from the quarry yielded an exceptional obsidian adze (Cristino et al. 2009) – a tool unsuited to working stone – suggesting some form of ritual dedication.

The *pukao* quarry deep inside Puna Pau crater and the statue quarry inside Rano Raraku crater have intense sensory qualities that would have heightened the potency of these locales: the sound of stone percussion would have been magnified by and reverberated within the craters; the temperatures of the crater interiors are distinctly higher and the air stiller than that outside; and quarrying and its sounds inside the craters would have been both hidden from and mute to the outside world. There is thus a conceptual interweaving between these craters as natural phenomena, the distinctive stone that each yields and its materialization through quarrying into representations and adornment of the ancestors and the restricted contexts of *ahu* and burials in which Puna Pau scoria and Rano Raraku tuff occur outside the quarries. Most likely the act of quarrying such potentially sacred places was imbued with ritual practice such as Linton (1923: 165) described for the statue quarries on the Marquesas where access was forbidden to most of the community and where quarrying was bounded by ritual observances.

Land-stone – crags and flows

Stone quarries associated with lava crags and flows are present throughout the island. These lack the liminality and visual drama of the volcano crater quarries and were intimately associated with cycles of activity that transformed the landscape *as a whole*. Our fieldwork suggests that these crags were favoured as cool places (due to air updraft) for obsidian knapping and, after being selectively quarried out, often became sediment catchments for crop plantings (Plate 7). *Ahu* are often situated between runs of major crags extruded from inland volcanoes to the sea. These crags simultaneously define the *ahu* plaza edges and at the same time provide stone for construction. Like the volcano quarries, *ahu* locations were concurrently quarries, places of monumental production and ritual centres. As we have seen, however, flow lava was harvested and used everywhere, the crags and stone spreads of the island being key media in constructing human places. Bent wood super-structures to the houses, palm leaves and other thatch materials would have been important too but Rapa Nui's crags and lava flows provided the substance that was literally and metaphorically foundational to all architecture.

Sea-stone

Of the various stone materials used in construction of Rapa Nui's prehistoric architecture, three derive from the sea and can only have been collected from the shore – the *poro*, fragments of coral and calcareous algae.



Plate 7 A quarried-out flow lava crag inland of *Ahu* Ura Uranga (photo: Mike Seager Thomas).

The translocation of many thousands of *poro*, carried inland from the seashore by hand, is Rapa Nui's unsung feat of collective human labour and vies in significance with the transport of *moai* and *pukao* from inland quarries to the coastal *ahu*. *Poro* were carried up or around cliffs and inland for use in *ahu* ramps and pavements and the pavements in front of boat-shaped houses (Plate 8), and are also present in *umu* and other structures. Boat-shaped houses high up on Poike had them. Inland *Ahu* Akivi and Urenga had them. *Ahu* and boat-shaped houses alike, situated on and behind the high cliffs of the northern coast, had them. *Poro* make smooth pavements, but the preference was not just functional. The pavements of boat-shaped houses often curve around the house's pointed ends where a pavement lacks practical value, while at *Ahu* Vinapu the *poro* comprising the ramp were widely spaced, compromising any strictly functional role. The *poro* ramps and pavements mimic the stony beaches of the island in appearance. The stones themselves originated by the sea and could only be garnered in quantity there and as such constitute a powerful allusion to the sea in inland locations (Hamilton forthcoming).



Plate 8 A boat-shaped house with its *poro* pavement at Ahu Tui Tai. Rano Raraku, source of the tuff for the *moai* is directly behind and the Poike peninsula with its three trachyte (a distinct fine-grained whitish rock used for some *moai* and *facia*) lava domes is behind again (photo: Adam Stanford).

The same may be true of coral and calcareous algae, neither of which were useful building materials, but which nonetheless were carried inland where they were incorporated into *manavai*, to which they were believed to draw rain (Englert 2006 [1936]: 31) (Plate 9).

Mountain-land-sea

So, inland stone was taken to the coast and sea-stone taken inland, while coastal *ahu*, situated at the point where the one element meets the other, combine land and sea stones. They contain flow lava used for facing walls, the crater stone used for *moai* and their *pukao*, the *poro* which surfaced the beach-like ramps and pavements in front of the *ahu* and the coral in the statues' eyes. Spatially, however, *ahu* architecture *reverses* the stones' natural configuration: in particular sea-stone – both the *poro* in the ramps and pavements and the coral of the statues' eyes – are on the landward side of the *ahu*.

The sense of stones

All materials have sensory qualities that can imbue them with meaning or provide media for significant associations – here we consider stone colour, size and shape.



Plate 9 Calcareous algae (left) and a *poro* fragment (right), both from the seashore, in an inland rock garden/*manavai* (circular stone-walled structure made to protect plants and to retain humidity) complex near inland *Ahu* Tuu Tahi. Scale 10cm (photo: Mike Seager Thomas).

Colour

The prehistoric islanders' use of stone showed a sensual interest in the visual qualities of colour, for example, where red-and-black, white-and-black and yellow-and-black stone blocks are alternated 'decoratively' on the platform walls of individual *ahu*. Moreover, since ethnography documents the existence of colour symbolism in many if not all societies, it seems likely that colours also held symbolic values on Rapa Nui. The colours probably involved in symbolism on the island are red (scoria), black (flow lava, obsidian and *poro*), yellow (Rano Raraku tuff) and white (trachyte, coral and algae). It is worth noting that some scholars have identified the primacy of red, black and white cross-culturally, both in terms of perception of colours, manifest in linguistic terminology (Berlin and Kay 1969) and symbolism, related fundamentally to bodily fluids (Turner 1967). Against this universalizing tendency, however, we need to recognize the cultural specificity of different systems of colour symbolism (for archaeological examples, see Gage *et al.* 1999 and papers in Jones and MacGregor 2002).

On Rapa Nui *ahu* provide the context where the greatest range of stone types and colours occur. Their platforms, ramps and pavements are primarily grey/black (quarried flow lava and *poro*). Their platforms sometimes incorporate Puna Pau red scoria and, very occasionally, 'white' trachyte in the front (Plate 4) and dark red scoria in the back. The *moai*, when made of Rano Raraku tuff, introduce the colour yellow. Eyes inserted in the eye-sockets of *moai* on *ahu* were made of coral for the whites and

either red scoria or black obsidian for the pupil. On the most elaborate sites, *moai* have red scoria *pukao* and historical accounts suggest that white stones were placed on top of these (Metraux 1971 [1940]: 300). The crematoria associated with *ahu* contain spreads of small fragments of red scoria, mixed with pieces of white burnt bone, dark flow lava and sometimes obsidian flakes. Following the *ahu* destruction phase, these colour mixes continue in inhumation/exposure burials in cists and chamber structures in-filled with layers of red scoria fragments, mixed with white coral and black obsidian flakes (Seelenfreund and Holdaway 2000) and sometimes, on top of the structures, pieces of *moai* stone. A white stone, bleached or painted white, was placed on top of a stone cairn to mark that an area was *tapu* (forbidden) while a body was being exposed to de-flesh it (Metraux 1971 [1940]: 16, 327). While the *exact* positioning of coloured stones in *ahu* seems to be important, in the burials the colours are generally mixed, suggesting that the removal of stones, colours and people from life reconstitutes them differently.

Red, white and yellow stones occur primarily in the ritual/ideological contexts of *ahu*, *moai* and burials and each colour has its own specific place or places within the architectural system. Outside these contexts, the use of red scoria and trachyte extends only to stone basins (*taheta*), recorded as used for a range of ritual purposes, from the mixing of turmeric for body painting to the collection of water for cleansing new born babies (Metraux 1971 [1940]: 15, 236–7; Van Tilburg 1986). By contrast, black, underlying and making up most of the island's landscape and architecture, is the connective colour. In historic times all the above colours were strategically used for body painting, feathered headdresses and bark cloaks (Metraux 1971 [1940]; Seelenfreund and Holdaway 2000). Seelenfreund and Holdaway (2000) interpret Rapa Nui's colour symbolism almost exclusively in relation to social class, red being associated with warriors, black with the ruling class and white with the *mana* – an impersonal force or quality that resides in people, animals and inanimate objects – while Van Tilburg (1986) associates red specifically with the ceremonial and sacred. It is likely that there was an island-wide system of colour symbolism that transcended specific materials, a system that included the meanings identified by Seelenfreund and Holdaway and Van Tilburg. However, given the complexity of systems of colour symbolism documented ethnographically (including the canonical example of the Ndembu (Turner 1967)), there may have been many other layers of meaning, some perhaps specific to the world of the dead rather than that of the living. One aspect that may be significant is the distinction between the *separation* of colours in different parts of the statues, which perhaps represent individual ancestors, and their *mingling* in the crematoria and later inhumation burials, which may stand for a more collective ancestry.

Size and shape

Ahu and other early structures on Rapa Nui incorporated a wide range of stone shapes and sizes, from rounded to angular and from granule-sized to immense boulders. Self-evidently, size mattered. This is most marked in the transport of *moai* and *pukao* to *ahu* all over the island but also notable in the widespread use of unnecessarily large, often dressed stones in the backs of *ahu*, and in boat-shaped houses, which occasionally incorporate

spectacularly long stone foundation stones. The obvious explanation for the remotely located *paenga* quarry on Terevaka, close to the highest point on the island, is that it yielded unusually large chunks of tough but easily workable basalt. These observations are wholly in accord with the ‘traditional’ view of prehistoric society on Rapa Nui, which attributes its collapse to the ever-increasing social and material demands of monument construction. This view, however, ignores *where* and *how* size mattered. *Moai* aside, the biggest stones in *ahu* very obviously face the sea. On the other hand, smaller stones – the *poro* in the ramps of *ahu*, smaller frontal *paenga* – face inland and are associated with inland architecture. Our field observations indicate that the smallest stones of all – beach pebbles (but not usually *poro*) and crumbs of red scoria are associated with crematoria and other burial contexts, irrespective of whether these were located landward or seaward of the *ahu*. Much of this recalls the duality of land/sea associations referred to above, but overarching this is a metaphorical perspective in which natural, architectural and human life cycles are conjoined through the medium of stone. The unlocking of the natural rock, its cleaving and exfoliation, and its steady abrasion by the sea, is paralleled in the islanders’ quarrying of the rock, its working down by them into statues and *paenga*, and the final grinding down of scoria – in some cases most likely taken from fallen *pukao*, for incorporation in crematoria/burials.

For shape, similar themes apply. From a distance it is often difficult to distinguish *ahu* from the island’s craggy flow lava. Indeed *ahu* often incorporated lava crags and flows into the body of their platforms, while stone shapes used in *ahu* on occasions mimic natural patterns. At the cost of some stability, rectangular blocks, for example, were set upright on the ground presenting the appearance of living rock, and the fitting or re-fitting of irregularly shaped stones in the pavements of *ahu* plaza and walls alike simulated the polygonal structures of naturally outcropping flow lava (Plate 10). Thus stone remained active and reflective, in its architectural reconstitution, of the formations and processes of its natural state. Linton (1923: 165) describes the belief that *ke’etu*, a red tuff used in the Marquesas for building slabs, grew slowly and constantly – here stone was conceived of as a living organism and the same perspective may have been true for stone on Rapa Nui.

Living stone

In our own culture, stone and petrification provide a metaphor for fixedness, permanence and unchanging nature. We use phrases like ‘cast in stone’ or ‘written in stone’ to refer to these qualities. These associations arise from natural characteristics of stone, shared to varying degrees by most types – hardness, dryness, weight, durability, etc. – and often contrasted with the characteristics of organic materials, which are softer, lighter, perishable and sometimes moist. One might expect the association of stone with hardness and permanence to apply *par excellence* to the great statues of Rapa Nui, which weigh c. 14 tons on average and reach heights of up to 10m.

There are two reasons why we might think that the statues and their associated stone structures were not, however, understood as fixed, unchanging and permanent. The first is the accumulating evidence that the monuments never achieved a final, finished form, but were in a constant state of flux, with *ahu* being ever enlarged and elaborated and statues

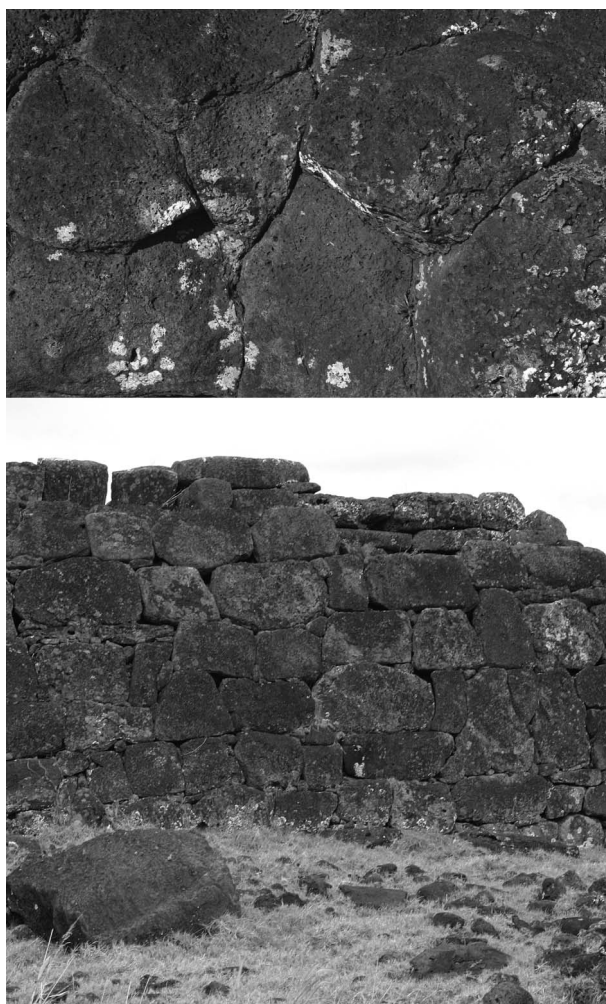


Plate 10 Polygonal flow lava at Tongariki (top), mimicked in the rear wall of *Ahu Hekii* (bottom). Natural polygons occur both upright and horizontally on the island, and both are mimicked in prehistoric structures (photos: Mike Seager Thomas).

being moved – and often incorporated in the body of the *ahu* during repair and enlargement (Hamilton et al. 2008). The second reason for doubting that stone was considered metaphorically as fixed and permanent is the emic notion, expressed to Heyerdahl and others by twentieth-century Rapa Nui people that the statues ‘walked’ from the quarry to the *ahu* (Heyerdahl 1989). This serves to remind us that whereas for us statues (in any material, stone or other) are clearly *representations* of people, gods or ancestors, not to be confused with the real thing, in many other societies the distinction is not so clear. Statues may *be* ancestors or gods or they may house them, either on a permanent basis or only at particular times, when summoned by the performance of appropriate rituals. In the case of Rapa Nui, it is suggested that it was the insertion of the eyes that achieved this transformation (Van Tilburg 1994: 147), but there are many other

possible actions too, such as painting of the statue, as at Vinapu (Mulloy 1961), or actions around the statues, such as lighting fires, dancing, singing and chanting.

So, if hardness, dryness and durability are not associated with fixedness and permanence in prehistoric Rapa Nui, do these qualities, and their contrast with softness, wetness and perishability, have some other significance? One possibility is the transformation that comes with death, when soft, moist flesh is transformed into hard dry bone and, by extension, perhaps also stone. This kind of symbolism is widespread ethnographically, for instance there are excellent examples from Madagascar (Bloch 1971; Parker Pearson and Ramilisonina 1998). Perhaps all dead people become bones, and really important ancestors become stone.

Fresh surfaces of some types of stone change considerably in colour with weathering, thus 'new'/refurbished *ahu* and new statues could in some cases have been differentiated for varying periods of time. Flow lava for example is lighter in colour when freshly worked and Rano Raraku tuff is fragile and continuously weathers, leaving fresh surfaces but denuded carving. Thus there is a sense in which the statues and *ahu* were 'animate' and changing and had life cycles. Could the breaking of stone and recycling of material reactivate it? In such a scenario the ultimate breaking of red, white and black and sometimes yellow stone down to the size of crumbs in the *ahu* crematoria joins the cycle of life and death into one.

Conclusion

Stones are and were everywhere to be found on Rapa Nui. In prehistoric Rapa Nui the poetics of constructing with stones allowed stone to act as a living substance that connected land and sea. Stone architecture linked the Ocean – a watery world from whence its colonizers came and where in Polynesian traditions the spirits of the living go on death – the concept of *Hawaiki* (Kirch and Green 2001) – with sacred places and sacred work where special stone was quarried. Rapa Nui's stones were central to networks of movement and wider systems of signification that pervaded ritual and the everyday on an island-wide basis. The sensory aspects of stone – distinctive colours, shapes and sizes – were used analogically in Rapa Nui's architecture to create material chains of signification from an incredibly monumental scale down to that of a grain of scoria in a cremation.

For Rapa Nui the importance of collecting and quarrying stone, moving and transporting stone and building with stone can be ascertained only by considering the stones as a part of a landscape whole, rather than through a narrow focus on the island's stone statues, *ahu* and the two main quarries of Rano Raraku and Puna Pau. It is possible to consider this on a holistic scale because of the island's small size and the excellent preservation of its surface archaeology and it therefore provides a model for considering stones and stone elsewhere. By combining our sensory awareness of the stones of Rapa Nui during fieldwork – the shapes, sizes and colours of stones, *together with* an understanding of their working properties and the distances over which they were transported – a number of different, but recurring, metaphorical themes can be inferred that situate the stones of Rapa Nui as a cultural medium.

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